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09/613,588	07/10/2000	John Wood	029299/0101	9715

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FOLEY AND LARDNER LLP  
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WASHINGTON, DC 20007

EXAMINER

WILLIAMS, LAWRENCE B

ART UNIT	PAPER NUMBER
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2611

DATE MAILED: 08/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	09/613,588		WOOD, JOHN	
	<b>Examiner</b>		<b>Art Unit</b>	
	Lawrence B. Williams		2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on amendments filed on 09 June 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 55-105 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 55-105 is/are rejected.
- 7) ☒ Claim(s) 83-86 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments, see Remarks, filed 09 June 2006, with respect to the rejection(s) of claim(s) 55-105 under USC 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. The examiner makes note to applicant's remark on page 11, lines 16-17; "the signal is reflected back in a variable manner that varies corresponding to the first bit sequence". The examiner respectfully responds that nothing in the claim language cites that the signal is reflected back in a variable manner. However, upon further consideration, a new ground(s) of rejection is made in view of Chadwick et al. (US Patent 6,005,891).

### ***Claim Objections***

2. Claims 83-86 are objected to because of the following informalities: The examiner suggest applicant inset the word "to" between "according" and "claim" in line 1 of the claims. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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4. Claims 55-57, 59 are rejected under 35 U.S.C. 102(b) as being anticipated by Chadwick et al. (US Patent 6,005,891).

(1) With regard to claim 55, Chadwick et al. discloses in Fig. 1, a method of signaling between first and second equipments, the method comprising the steps of: (a) transmitting a signal from said first equipment (PN generator, 30) to said second equipment (antenna, 20); (b) reflecting said signal back to said first equipment in a manner corresponding to a first bit sequence, (c) receiving the signal thus reflected at said first equipment; and (d) comparing said signal thus reflected with said transmitted signal to thereby extract said first bit sequence (col. 3, lines, 27-36, abstract). Chadwick discloses transmitting a bit pattern from the PN generator (col. 2, lines 30-39) to an antenna, (Chadwick also discloses the principles of the invention apply to coaxial cable systems as well, col. 2, lines 13-14). Chadwick discloses receiving the reflected bit pattern, processes, then, comparing the reflected bit pattern with the original bit pattern to produce a number representing the condition of the antenna (col. 1, line 57-col. 2, line 14).

(2) With regard to claim 56, Chadwick et al. also discloses the method comprising the steps of transmitting a signal corresponding to a second bit sequence from said first equipment to said second equipment, and extracting said second bit sequence from said signal at said second equipment. Chadwick et al. discloses that the process is repeated (col. 3, lines 44-55).

(3) With regard to claim 57, Chadwick et al. also discloses the method comprising the step of checking at the first equipment the signal thus reflected (col. 1, lines 49-56).

(4) With regard to claim 59, Chadwick et al. also discloses the method comprising the step of reflecting said signal back to said first equipment out of phase with said signal. Chadwick et al. discloses demodulating the reflected signal with a sine wave, which is 90 degrees out of

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phase with the original signal, which would signify the reflected signal out of phase with the initial transmitted signal (col. 2, lines 4-11).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 60-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chadwick et al. (US Patent 6,005,891) as applied to claim 55 above, and further in view of Wolf (US Patent 3,691,519).

(1) As noted above Chadwick et al discloses all limitations of claim 55 above.

Furthermore, Chadwick et al. teaches wherein said first and second equipments are linked by a transmission line (col. 2, lines 13-14) having a reflective termination (impedance mismatch) at said second equipment (col. 1, lines 49-51). Chadwick et al. is silent as to the method comprising the step of varying the reflective property of said termination in a manner corresponding to said first bit sequence.

However, Wolf teaches a pulse reflecting highway signaling system wherein he teaches in Fig. 1, first (40) and second equipments (stations A-D) linked together by a transmission line having a reflective impedance and varying the varying the reflective property of said termination (abstract).

It would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of Wolf with the invention of Chadwick et al. as a method of distinguishing multiple pieces of equipments.

(2) With regard to claim 61, Wolf also discloses the method comprising the step of varying the reflective property of said termination between open-circuit and short-circuit conditions in a manner corresponding to said first bit sequence (abstract).

It would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of Wolf with the invention of Chadwick et al. as a method of distinguishing multiple pieces of equipments.

7. Claims 62-69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chadwick et al. (US Patent 6,005,891) as applied to claim 56 above, and further in view of Huebner (US Patent 3,798,608).

(1) With regard to claim 62, claim 62 inherits all limitations of claim 56, above. As noted above, Chadwick et al. discloses all limitations of claim 56 including the step of transmitting a second bit sequence from the first equipment to the second equipment. Chadwick et al. does not however teach the step comprising the application of successive oppositely-directed voltage excursions to the transmission line.

However, Huebner discloses a digital transmission apparatus where he discloses transmitting from a first equipment (transmitter) to a second equipment (receiver) comprising the application of successive oppositely-directed voltage excursions to a transmission line (col. 2, lines 31-48).

It would have been obvious to one skilled in the art to incorporate the teachings of Huebner as a method of ensuring reliable and continuous transmission of data (col. 2, lines 17-21).

(2) With regard to claim 63, Huebner also discloses the method according to claim 62, and comprising the step of varying the phase of successive oppositely-directed voltage excursions in dependence on a second bit sequence (col. 5, lines 22-27).

It would have been obvious to one skilled in the art to incorporate the teachings of Huebner as a method of ensuring reliable and continuous transmission of data (col. 2, lines 17-21).

(3) With regard to claim 64, claim 64 inherits all limitations of claim 62, above. Though Huebner is silent as to the excursions being substantially the same extent, from Fig. 2, the excursions appear to be the same extent. Also one skilled in the art would be well aware of bi-polar signaling including excursions of  $\pm 3$ ,  $\pm 5$ , etc.

It would have been obvious to one skilled in the art to incorporate the teachings of Huebner as a method of ensuring reliable and continuous transmission of data (col. 2, lines 17-21).

(4) With regard to claim 65, Though Huebner is silent as to the excursions being substantially the same extent, from Fig. 2, the excursions appear to be the same extent. Also one skilled in the art would be well aware of bi-polar signaling including excursions of  $\pm 3$ ,  $\pm 5$ , etc.

It would have been obvious to one skilled in the art to incorporate the teachings of Huebner as a method of ensuring reliable and continuous transmission of data (col. 2, lines 17-21).

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(5) With regard to claim 66, claim 66 inherits all limitations of claim 62. Furthermore, Huebner also discloses in Fig. 2, wherein the oppositely-directed voltage excursions are of opposite polarity.

It would have been obvious to one skilled in the art to incorporate the teachings of Huebner as a method of ensuring reliable and continuous transmission of data (col. 2, lines 17-21).

(6) With regard to claim 67, claim 67 inherits all limitations of claim 63. Furthermore, Huebner also discloses in Fig. 2, wherein the oppositely-directed voltage excursions are of opposite polarity.

It would have been obvious to one skilled in the art to incorporate the teachings of Huebner as a method of ensuring reliable and continuous transmission of data (col. 2, lines 17-21).

(7) With regard to claim 68, claim 68 inherits all limitations of claim 64. Furthermore, Huebner also discloses in Fig. 2, wherein the oppositely-directed voltage excursions are of opposite polarity.

It would have been obvious to one skilled in the art to incorporate the teachings of Huebner as a method of ensuring reliable and continuous transmission of data (col. 2, lines 17-21).

(8) With regard to claim 69, claim 69 inherits all limitations of claim 66. Furthermore, Huebner also discloses in Fig. 2, wherein the oppositely-directed voltage excursions are symmetrical about nominally zero volts.



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It would have been obvious to one skilled in the art to incorporate the teachings of Huebner as a method of ensuring reliable and continuous transmission of data (col. 2, lines 17-21).

8. Claims 70-82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chadwick et al. (US Patent 6,005,891) in combination with Huebner (US Patent 3,798,608) as applied to claims 62-64, 66, and 69, respectively and further in view of Lender (US Patent 3,303,284).

(1) With regard to claim 70, claim 70 inherits all limitations of claim 62. As noted above, Chadwick et al. in combination with Huebner discloses all limitations of claim 62. They do not however teach the method comprising the step of applying a further voltage component in association with the oppositely-directed excursions.

However, Lender teaches a framing method and apparatus for duobinary data transmission wherein he discloses introducing a sine wave (further voltage component) into the duobinary pulses (oppositely-directed excursions) to be transmitted (col. 1, lines 45-48).

It would have been obvious to one skilled in the art to incorporate the teachings of Lender as a method of preserving transmission rates in duobinary transmissions (col. 5, lines 3-10).

(2) With regard to claim 71, claim 71 discloses the exact limitations of claim 70. Therefore the same rejection applies.

(3) With regard to claim 72, claim 72 discloses the exact limitations of claim 70. Therefore the same rejection applies.

(4) With regard to claim 73, claim 73 discloses the exact limitations of claim 70. Therefore the same rejection applies.

(5) With regard to claim 71, claim 71 discloses the exact limitations of claim 70.

Therefore the same rejection applies.

(6) With regard to claims 75-79, claims 75-79 appear to be substantial duplicates of claims 70-74. Therefore a similar rejection applies.

(7) With regard to claim 80, claim 80 inherits all limitations of claim 70 above.

Furthermore, Huebner et al. also teaches wherein the further voltage component has a magnitude medial of the voltage excursion (col. 2, lines 37-43). Huebner discloses the transmission of the bi-polar signals separated by a quiet period (0 volts) for approximately one-half of the bit period.

It would have been obvious to one skilled in the art to incorporate the teachings of Huebner et al. as a method of preserving transmission rates in duobinary transmissions (col. 5, lines 3-10).

(8) With regard to claim 81, claim 81 inherits all limitations of claim 75 above.

Furthermore, Huebner et al. also teaches wherein the further voltage component has a magnitude medial of the voltage excursion (col. 2, lines 37-43). Huebner discloses the transmission of the bi-polar signals separated by a quiet period (0 volts) for approximately one-half of the bit period.

It would have been obvious to one skilled in the art to incorporate the teachings of Huebner et al. as a method of preserving transmission rates in duobinary transmissions (col. 5, lines 3-10).

(9) With regard to claim 82, claim 82 inherits all limitations of claim 80 above.

Furthermore, Huebner et al. also teaches wherein the further voltage component is a constant substantially zero volts (col. 2, lines 37-43). Huebner discloses the transmission of the bi-polar signals separated by a quiet period (0 volts) for approximately one-half of the bit period.

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It would have been obvious to one skilled in the art to incorporate the teachings of Huebner et al. as a method of preserving transmission rates in duobinary transmissions (col. 5, lines 3-10).

(10) With regard to claim 83, claim 83 inherits all limitations of claim 70. Furthermore, Huebner discloses checking the timing of the (polarity pulses) voltage excursions (col. 9, line 67-col. 10, line 3).

Thus one skilled in the art would have been motivated to incorporate the teachings of Huebner as a method of monitoring the message information (col. 10, lines 3-7).

(11) With regard to claim 84, claim 84 inherits all limitations of claim 75. Furthermore, Huebner discloses checking the timing of the (polarity pulses) voltage excursions (col. 9, line 67-col. 10, line 3).

Thus one skilled in the art would have been motivated to incorporate the teachings of Huebner as a method of monitoring the message information (col. 10, lines 3-7).

(12) With regard to claim 85, claim 85 inherits all limitations of claim 80. Furthermore, Huebner discloses checking the timing of the (polarity pulses) voltage excursions (col. 9, line 67-col. 10, line 3).

Thus one skilled in the art would have been motivated to incorporate the teachings of Huebner as a method of monitoring the message information (col. 10, lines 3-7).

(13) With regard to claim 86, claim 86 inherits all limitations of claim 82. Furthermore, Huebner discloses checking the timing of the (polarity pulses) voltage excursions (col. 9, line 67-col. 10, line 3).

Thus one skilled in the art would have been motivated to incorporate the teachings of Huebner as a method of monitoring the message information (col. 10, lines 3-7).

(14) With regard to claim 87, claim 87 inherits all limitations of claim 70. Furthermore, Huebner discloses checking the interval before and after a first or second voltage excursion (col.7, line 57-col. 8, line 3).

Thus one skilled in the art would have been motivated to incorporate the teachings of Huebner as a method of detecting errors in the system.

(15) With regard to claim 88, claim 88 inherits all limitations of claim 75. Furthermore, Huebner discloses checking the interval before and after a first or second voltage excursion (col.7, line 57-col. 8, line 3).

Thus one skilled in the art would have been motivated to incorporate the teachings of Huebner as a method of detecting errors in the system.

(16) With regard to claim 89, claim 89 inherits all limitations of claim 80. Furthermore, Huebner discloses checking the interval before and after a first or second voltage excursion (col.7, line 57-col. 8, line 3).

Thus one skilled in the art would have been motivated to incorporate the teachings of Huebner as a method of detecting errors in the system.

(17) With regard to claim 90, claim 90 inherits all limitations of claim 82. Furthermore, Huebner discloses checking the interval before and after a first or second voltage excursion (col.7, line 57-col. 8, line 3).

Thus one skilled in the art would have been motivated to incorporate the teachings of Huebner as a method of detecting errors in the system.

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(18) With regard to claim 91, claim 91 inherits all limitations of claim 83. Furthermore, Huebner discloses checking the interval before and after a first or second voltage excursion (col.7, line 57-col. 8, line 3).

Thus one skilled in the art would have been motivated to incorporate the teachings of Huebner as a method of detecting errors in the system.

(19) With regard to claim 92, claim 92 inherits all limitations of claim 70. Furthermore, Huebner discloses logic threshold detectors (col. 2, lines 47-50, col. 6, lines 7-25), which would inherently include checking the nominal mid-point zero-crossing of the voltage excursions. Thus one skilled in the art would have been motivated to incorporate the teachings of Huebner as a method of detecting errors in the system.

(20) With regard to claim 93, claim 93 inherits all limitations of claim 75. Furthermore, Huebner discloses logic threshold detectors (col. 2, lines 47-50, col. 6, lines 7-25), which would inherently include checking the nominal mid-point zero-crossing of the voltage excursions. Thus one skilled in the art would have been motivated to incorporate the teachings of Huebner as a method of detecting errors in the system.

(21) With regard to claim 94, claim 94 inherits all limitations of claim 80. Furthermore, Huebner discloses logic threshold detectors (col. 2, lines 47-50, col. 6, lines 7-25), which would inherently include checking the nominal mid-point zero-crossing of the voltage excursions. Thus one skilled in the art would have been motivated to incorporate the teachings of Huebner as a method of detecting errors in the system.

(22) With regard to claim 95, claim 95 inherits all limitations of claim 82. Furthermore, Huebner discloses logic threshold detectors (col. 2, lines 47-50, col. 6, lines 7-25), which would

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inherently include checking the nominal mid-point zero-crossing of the voltage excursions. Thus one skilled in the art would have been motivated to incorporate the teachings of Huebner as a method of detecting errors in the system.

(23) With regard to claim 96, claim 96 inherits all limitations of claim 83. Furthermore, Huebner discloses logic threshold detectors (col. 2, lines 47-50, col. 6, lines 7-25), which would inherently include checking the nominal mid-point zero-crossing of the voltage excursions. Thus one skilled in the art would have been motivated to incorporate the teachings of Huebner as a method of detecting errors in the system.

(24) With regard to claim 97, claim 97 inherits all limitations of claim 87. Furthermore, Huebner discloses logic threshold detectors (col. 2, lines 47-50, col. 6, lines 7-25), which would inherently include checking the nominal mid-point zero-crossing of the voltage excursions.

Thus one skilled in the art would have been motivated to incorporate the teachings of Huebner as a method of detecting errors in the system.

(25) With regard to claim 98, claim 98 inherits all limitation of claim 70. Furthermore, Huebner discloses the step of checking the total extent of the voltage excursions (col. 7, line 57-col. 8, line 4).

Thus one skilled in the art would have been motivated to incorporate the teachings of Huebner as a method of detecting errors in the system.

(26) With regard to claim 99, claim 99 inherits all limitation of claim 75. Furthermore, Huebner discloses the step of checking the total extent of the voltage excursions (col. 7, line 57-col. 8, line 4).

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Thus one skilled in the art would have been motivated to incorporate the teachings of Huebner as a method of detecting errors in the system.

(27) With regard to claim 100, claim 100 inherits all limitation of claim 80. Furthermore, Huebner discloses the step of checking the total extent of the voltage excursions (col. 7, line 57- col. 8, line 4).

Thus one skilled in the art would have been motivated to incorporate the teachings of Huebner as a method of detecting errors in the system.

(28) With regard to claim 101, claim 101 inherits all limitation of claim 82. Furthermore, Huebner discloses the step of checking the total extent of the voltage excursions (col. 7, line 57- col. 8, line 4).

Thus one skilled in the art would have been motivated to incorporate the teachings of Huebner as a method of detecting errors in the system.

(29) With regard to claim 102, claim 102 inherits all limitation of claim 83. Furthermore, Huebner discloses the step of checking the total extent of the voltage excursions (col. 7, line 57- col. 8, line 4).

Thus one skilled in the art would have been motivated to incorporate the teachings of Huebner as a method of detecting errors in the system.

(30) With regard to claim 103, claim 103 inherits all limitation of claim 87. Furthermore, Huebner discloses the step of checking the total extent of the voltage excursions (col. 7, line 57- col. 8, line 4).

Thus one skilled in the art would have been motivated to incorporate the teachings of Huebner as a method of detecting errors in the system.

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(31) With regard to claim 104, claim 104 inherits all limitation of claim 92. Furthermore, Huebner discloses the step of checking the total extent of the voltage excursions (col. 7, line 57- col. 8, line 4).

Thus one skilled in the art would have been motivated to incorporate the teachings of Huebner as a method of detecting errors in the system.

9. Claim 105 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chadwick et al. (US Patent 6,662,135 B1) in combination with Huebner (US Patent 3,798,608) as applied to claim 62 above, and further in view of Jensen et al. (US Patent 5,5586,054).

As noted above, Chadwick et al. in combination with Huebner disclose all limitations of claim 62. They do not however disclose the method comprising the step of time domain reflectometry to detect transmission line faults. Huebner does disclose the use of a time domain reflective mixer for performing test on a communication system device.

However, Jensen et al. discloses a time-domain reflectometer for detecting transmission line faults (col. 1, lines 10-20).

It would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of Jensen et al to assist in the isolation and repair of cable faults and other network problems.

### ***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.



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- a.) Driscoll discloses in US Patent 3,668,640 Signalling And Indicating System.
- b.) Matsumura discloses in US Patent 4,361,904 Method And Testing Transceiver And Transceiver Including Testing Apparatus.
- c.) Bell discloses in US Patent 4,701,938 Data System.
- d.) Hulbert discloses in US Patent Mobile Radio Power Control Device Using The Comparison of Retransmitted Data.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence B Williams whose telephone number is 571-272-3037. The examiner can normally be reached on Monday-Friday (8:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye can be reached on 571-272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

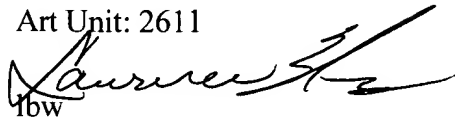
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Lawrence B. Williams

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A handwritten signature in black ink, appearing to read "Lawrence", with a stylized flourish at the end.

lbw

August 20, 2006